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## PRUNING FROSTED CITRUS TREES

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It has previously been pointed out by this Station that it is wise to defer pruning frost injured trees until it is perfectly clear just how far back the wood has been killed. After the line of demarcation between living and dead wood becomes apparent, no time should be lost in taking the necessary steps toward reconstructing the top in the best way with the least possible loss of time.

The problems involved in mending and reforming the tops of frosted citrus trees fall naturally into two classes, viz., those having to do with very young trees and those concerned with large mature trees.

### REHEADING YOUNG TREES

When a one or two-year-old tree has been killed to a point near the ground it should first be determined in each individual case whether the dead wood extends below the bud union. If there remains enough live wood above the union to grow a strong shoot, such a shoot may be allowed to grow and become the trunk of the new tree, all other shoots being suppressed. If on the other hand the trunk is killed below the union it will be necessary to set a new bud. The opportunity is thus presented of reconsidering the relative profits to be derived from oranges, lemons or pomelos. In case the root is sweet orange the bud may be set immediately, provided there is sufficient room to do so without excavating the soil, for in no case should a bud be set below the soil. In case the trees have been killed to the ground it is well to select the most vigorous sprout and bud into this two or three inches above the ground. If the root is sour orange or pomelo

it is best to place the bud six or eight inches from the ground on a strong sprout. This will result in a somewhat hardier tree and one more resistant to gum disease.

In all cases where a new trunk must be grown on trees already planted in orchard form, it is necessary of course to stake the trees and tie them every few inches, taking care to disbud often and remove all sprouts from the root, eventually heading the tree at the desired height. A stake larger than the customary building lath is advisable in order to prevent injury by passing teams and tillage tools.

Where the tops of young trees are partly frozen it will be found, especially with lemons, that the more rapid growing upright shoots have been killed while the fine fruiting brush has been spared. Instead of cutting back all of these injured shoots in proportion to the injury, it is much better, especially with lemons, to take out most of the very strong upright canes entirely. If all are merely cut back and allowed to remain each one will throw up several similar shoots which in turn may be cut back, the final result being a broom-like growth with far too many shoots. The proper pinching and thinning of such a multiplicity of shoots will involve much more labor than the commercial orchardist can afford. It is better, therefore, to remove most of the upright vegetative shoots entirely and rely on new shoots from the horizontal wood to enlarge the framework of the top. All water sprouts arising from the trunk and around the crotches should be vigorously suppressed. It is a good plan to whitewash the exposed trunks in order to prevent sunburning of the bark.

In many cases the bark of the trunks of young trees has been split by the frost and has dried out resulting in a strip of dead bark on one side, usually the southwest side. This condition is not necessarily serious, provided there remains a strip of live healthy bark of sufficient width to provide a flow of sap to the top. The living bark will gradually increase in width and extend over the dead areas, in time covering them entirely. In order to prevent the entrance of wood decaying fungi it is well to paint the dead areas with white lead or asphalt paint.

#### REHEADING OF MATURE TREES

Orange trees are much more resistant to frost than lemon trees. Over certain large areas the recent freeze has ruined the fruit and completely defoliated the trees without killing back the wood to any appreciable extent. In such a case the trees need no extra pruning, although while the leaves are absent a good opportunity presents

itself to remove conflicting branches and thin the brush with greater ease and efficiency than is possible when the trees are covered with leaves.

Where the wood is killed back to any extent, however, too many shoots are apt to start from the live wood and many suckers from about the crotches. Theoretically the shoots should be thinned out, leaving only what is needed. Those left will be stronger and bear more fruit than if such a large number were allowed to struggle for life. Practically, however, such a course would require more labor than is available and large growers will have to adopt the next best course, viz., that of cutting out all the dead wood and thinning the new growth by taking out bodily a certain number of branches.

Where lemon trees have been killed back severely it is best to withhold or decrease the fertilizer during the succeeding year in order that a more moderate growth may take place. Frozen trees have been thrown out of balance. They have the same amount of root as before which is now pouring sap into a much reduced top. The result is bound to be a tremendous new growth breaking out all over the trunk and branches. At best a great deal of labor will be required to properly sucker the trees. If additional stimulation is brought about by the application of quick acting fertilizers this trouble will be increased. Wise lemon growers prefer to build the new head out of the more moderate growth of fruiting wood rather than out of water sprouts. It is not necessary or always advisable to root-prune frosted trees, but if hard-pan or plow-sole exists it may be broken up with a subsoil plow at this time with less injury to the trees from cutting large roots. The number of roots which may be cut with impunity will of course depend upon the amount the tops of the trees have been killed back.

Whenever large limbs are taken out it is well to apply some good antiseptic to the cut surfaces in order to prevent the entrance of decay organisms and to prevent undue drying out and checking of the wood. White lead paint and asphalt paint are good dressings, while liquid grafting wax is often used. A good formula for the wax is 6 lbs. resin, 1 lb. beeswax, and 1 pint of linseed oil. Another wound dressing which is very cheap and has been highly recommended consists of three parts melted resin mixed with one part warm crude petroleum.

“It seems reasonably certain that no injury to the tree can result from any of the materials passing from the frozen oranges back into the tree. An examination of those oranges which have been too badly frozen to be fit for shipment, shows that most of them have been only

partially killed; consequently they are presumably respiring carbon dioxide. This loss of energy would be saved if the oranges were removed from the tree rather than allowed to hang all summer. There is no experimental evidence, however, to show whether this loss is sufficient to warrant the cost of early removal by hand." In case the fruit is picked off the trees it may safely be plowed under, thus adding humus and some plant food to the soil. There is no danger of the soil becoming acid as a result of this practice.